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By-Entwisle, Doris R.

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Because socialization in terms of language behavior is the pivot for all other socialization, great emphasis is being placed in the linguistic determinants of cognition, and the influence of parents' language on child language and cognition. The same life conditions that foster dialect differences may be presumed to lead to semantic differences. At simple levels of discourse, difficulties in communication may be minimal, but semantic differences, when added to phonological and dialect differences, may have very serious consequences for the reading instruction of young children. Much evidence suggests that from first grade on there are widening gaps between the language of children from poverty environments and those from middle class groups. Word association research suggests specific kinds of deficits, particularly in consolidation of verbs and adverbs. There may be a lack of environmental forces to encourage semantic development which not only causes reading deficits but rules out reading as a source of semantic enrichment. The author describes studies in word association of black and white inner city children, compared with rural Maryland and old order Amish children. She suggests developing semantic structures through schools games which provide drill on particular skills, and more mixing of students in the school and the community. (AMM)

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THE CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

SEMANTIC SYSTEMS OF MINORITY GROUPS

DORIS R. ENTWISLE

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SEMANTIC SYSTEMS OF MINORITY GROUPS

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Doris R. Entwisle

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The Johns Hopkins University
Baltimore, Maryland

Parts of this report will appear in "Semantic Systems of Children: Some Assessments of Social Class and Ethnic Differences" in Language and Poverty: Perspectives on a Theme, F. Williams (ed.), Chicago: Markham Publishing Co.; and in "Word Association Studies of Amish Children, Comparisons with Other Minority Groups" in Proceedings of the Temple University Conference on Child Socialization, J. Hostetler (ed.).

Topics which are of equal interest in the study of persons and in the study of societies are rare. Language, however, is a functional requisite both of selfhood and of social systems, and the study of language cannot therefore avoid an interdisciplinary emphasis. The process of language acquisition is certainly not yet well understood; nevertheless the new generation acquires its native tongue, whatever it may be, and socialization in terms of language is the central pivot for all other socialization. Such socialization relates directly to social stratification and to social mobility.

Because socialization in terms of language behavior is the pivot for all other socialization, there has come to be lately great emphasis on the linguistic determinants of cognition. Many studies are presently concerned with the influence of parents' language on child language and cognition. A well-known example is the work of Hess and his associates (1968) who observe that when lower class black mothers attempt to instruct their children in simple tasks they use shorter sentences, fewer abstract words, and generally fail to point out alternative actions in comparison with middle class (black) mothers. The lower class black mother presents to her child a relatively undifferentiated view of the world and by this means may shape his cognitive style. If one thinks of upward mobility - "life chances" - it could be that children who are socialized linguistically in such ways are handicapped compared to children from other milieus.

The disadvantaged black urban child's relative handicaps in the first-grade classroom are presently the focus of much social concern, but by no means constitute the entire poverty subculture. Poor whites, Mexican Americans, Indians, and others, actually outnumber poor blacks. The structural conditions of the environment

external to the school - the sociocultural context of the community - no doubt can lead to profound differences in cognitive development for members of many disadvantaged groups and one would not necessarily expect that the differences would be the same from one group to another. The school has the task of enhancing or modifying such development no matter what the community context because now children in most states must stay in school until age 16. The school's task of enhancing development may be unrealizable without detailed knowledge of the cognitive status of various subgroups and of the kinds of actions that can be taken to modify this status. Further, if the school must persist in a task for which it is ill-equipped, it may do worse than fail in the task per se, i.e. it may alienate the child from other social institutions.

Some parts of the process of language acquisition by minority groups are better understood than others. Data are beginning to accumulate on the phonology and syntax of black urban speakers, for instance. But thorough understanding of the language socialization process requires research on children from <u>many</u> different subcultures. Experiments or laboratory observational sessions that will yield useful data on language are hard to design because experimenters can act for only very insignificant amounts of time compared to time the developing individual normally is producing or witnessing language behavior. Even an heroic effort like Cazden's (1965) where 40 minutes was spent daily with children over a three-month period may represent only a "small" amount of time. In many ways, then, naturally occurring variation among subcultural groups may surpass the "experimental maneuver" as a strategy, or in fact be the only feasible approach.

To chart the area of this report it is convenient to divide linguistic development into three branches: acquisition of phonology, acquisition of syntax, and acquisition of semantics. Here attention will be confined to acquisition of semantics. Emphasis

will be on semantic differences between minority groups.

Semantic Development

Elements of a linguistic code that appear to be the same (neglecting phonological differences), words like "table" or "run", need not have identical semantic implications for speakers from different cultural groups. Differences in semantic structure have received almost no attention, because the topic is an unwieldy one, both in terms of its theoretical underpinnings and in terms of its methodology. Nevertheless the same life conditions that foster dialect differences would be presumed to lead to semantic differences. At simple levels of discourse difficulties in communication may be minimal, but semantic differences, when added to the phonological and dialect differences already mentioned, may have very serious consequences for the reading instruction of young children. Differences in semantic structure could impose a heavy burden upon the minority group child, even though so far little notice has been taken of these structures. And, as McNeill (1965) points out, the semantic component of children's grammar has repercussions for wide areas of cognition beyond language itself.

Research of others testifies that grammatical development is already well along by age 4 and grammatical cues are used efficiently in repetition or memory tasks by children at age 5. Grammatical development is revealed by knowledge of pluralization, verb inflections, and so forth. The preponderance of syntagmatic responses in word association data is another kind of evidence for this early grammatical maturity. McNeill (1965) cleverly demonstrates however, that a great amount of semantic development,

the structuring and elaboration of meanings, must be acquired after age 5. By asking children to repeat sentences immediately after hearing them, and by varying the semantic and syntactic consistency in the sentences, he shows that five-year-old children are not able to profit from semantic consistency whereas 8-year-olds can, although both use syntactical cues equally well.

This same trend in semantic development over ages 5 to 10 is evidenced in word association data by the gradual increase in the number of responses that match the form class of the stimulus word and in the convergence toward a few high-frequency responses. (Entwisle, 1966 (a) (b) (c), 1968 (a) (b)). Instead of giving as responses words that <u>follow</u> the stimulus word in a sentence ("begin" - "to cry"), as children advance in age they give as responses more words that could <u>replace</u> the stimulus word in a sentence ("begin" - "start"). It is particularly noteworthy that these replacement words (paradigmatics) are not limited to synonyms - "begin" has "end" and "stop" as high-frequency adult responses, and most common adjective have antonyms ("black" - "white", "tall" - "short") as high-frequency responses. Paradigmatic responses contain much evidence of semantic structures.

The building of a child's semantic structure is a long slow process. Semantic enrichment probably continues throughout life, but its major phase appears to occur over the elementary school years (McNeill, 1965). Because it is a long slow process, it may be more environmentally dependent than syntactic development. If it <u>is</u> more environmentally dependent, it should show greater subcultural variability than subcultural differences in syntactic development (which appear to be small).

To shed light on differing semantic structures considerable further analysis has been undertaken on word association data collected in 1961-66. This analysis focuses on differences in

semantics among minority groups. Obviously this is a much less straightforward kind of analysis than analyses by form class because the number of possible responses is very large and there is no single dimension along which responses can be compared.

A few words are needed at this point about the nature of semantic development. Very briefly, it is convenient to think of a child constructing a central dictionary where a word is classified by semantic markers. The number of markers is much smaller than the number of words. A word like "flower" may have a single marker "alive", and then acquire other like "small", "plant" etc. as a child becomes older. If the child's associations were sampled at a time when "flower" had the single marker "alive", and words like "mouse" also had that same single marker, the child would use "flower" and "mouse" in the same contexts without finding anything anomalous. For instance, he would say "The flower has babies" and "The mouse has babies". As more markers are acquired, the set of contexts deemed by a child to be appropriate for a word will decrease. For instance if the marker "plant" is added, the child will now no longer say "The flower has babies" because having babies is a characteristic of (some) animals but not plants. The presence of more markers will also be reflected in a reduction in the variety of words given in free association.

Associative structures develop at different rates for rare as opposed to common words and for words of one form class compared to another (adjectives vs. verbs, for instance). Words that occur often like "table" or "he", have associates even for young children that strongly resemble adult associates, and the main differences in associative patterns over age occurs in the convergence toward a single high frequency response. For adults, "table" produces "chair" in 65 per cent of adult respondents, compared to about 30 per cent at kindergarten-first grade, or 50 per cent in later years of elementary school (Entwisle, 1966 a). The word "cocoon" however

yields "butterfly" in 30 per cent of adults, in 15 per cent of fifth-graders or 3rd graders, but is seldom given by first-graders. A low-frequency word, then, is distinguished developmentally by being later to develop strong associates and by approaching a lower asymptote of commonality (the pattern of associations, even for adults, is more varied).

Words of various form-classes have different rates of development. Verbs and adverbs develop later than pronouns and adjectives. Of course different form classes occur with different frequencies and this alone would be expected to produce some differences in associative structuring. Pronouns, for example, occur more frequently than any other form class, particularly in informal discourse (see French, Carter, and Koenig, 1930). Some verbs do occur frequently, verbs like "give", "run", and "sell". It is noteworthy, however, that these most common verbs tend to be irregular verbs, so although they may occur "often" from the point of view of the grammarian, the occurrences in different formats may at first be interpreted by the child to be occurrences of different words. (Over the elementary school years past tenses of irregular verbs--"sell"--"sold", are given as associates for a while and then drop out. Past tenses of regular verbs--"add"--"added", are never given as associates. This strongly suggests that past tenses of irregular verbs are being learned as separate words.) Also verbs are complicated because of auxiliaries. Verbs may not have "high frequency" occurrence in the same sense as other form classes.

Another factor that distinguishes verbs from nouns, adjectives, or pronouns, is in their being less often specifiable by ostensive definition - every noun on the list of stimulus words I used can be defined ostensively ("bird", "fruit", "insect", etc.). This was not intentional.) For this list at least, there is no correlation between this property and the rarity of the word.

"Cocoon" is just as well defined ostensively as "table" although it may take longer to find a cocoon than a table in one's immediate environment. For verbs the same cannot be said. While "run" or "sit", two very common verbs, can be defined ostensively, "maintain" or "restore" cannot (even though according to the Thorndike-Lorge (1944) word count both these verbs occur much more often than "cocoon"). Apparently ease-of-definition is correlated with frequency for verbs. It is not surprising, then, that verbs (and adverbs) appear to develop more slowly than adjectives or pronouns on the basis of conceptual complexity and/or frequency. Our data suggest that adjectives and pronouns are well-developed by third grade but that some verbs and adverbs are still in the process of development at fifth grade.

Much the same point is made by Roger Brown (1968) based on a different kind of data. He compared nouns and verbs of high frequency for adults (among the first thousand for each form class respectively) and <u>not</u> of high frequency for children, and also the converse (nouns and verbs of high frequency for children and <u>not</u> of high frequency for adults.) He concluded that nouns and verbs used by children have more consistent semantic implications than those used by adults. In fact, semantic elaboration may be a lifelong process and even common words may have their meanings altered or extended in adulthood ("soft"--"sell", for example). It may be particularly difficult for the child in an impoverished environment to expand his semantic system. Word association and other data reinforce this conclusion. Perhaps larger differences in semantic systems prevail between the adult slum dweller and the adult suburbanite than between children of the slum and suburbia. Concrete evidence in this area is badly needed. A little data on associates of Negro college students (Belcher and Campbell, 1968) suggests much lower commonalities for common words, but probably there are too few data to warrant conclusions.

Results

Earlier (Entwisle and Greenberger, 1968) the three most common responses for black and white children who live in the inner city of Baltimore was given. In Appendices A and B of this report similar data are provided for rural Maryland children and for Amish children residing in rural areas around Lancaster, Penna. In Appendix C the response commonality (sum of the percentages for the three most popular responses) is given for the three main lexical classes. Respondents are drawn from inner city, suburban and rural groups equated for IQ (only strata where children are half medium IQ and half low IQ are included, and they are equally represented in every group). These data permit comparisons between urban children and rural children. Similar data for adults (college students) are also given.

Blacks vs. whites. Data for first graders show black inner city children to be not far behind in number of paradigmatic responses compared to white inner city children, and ahead of white suburban children (Entwisle, 1968(a).) At the same time rates based on number of paradigmatic responses, ignore differences in meaning - semantics - between groups. For simple words, "table", "run", "black", etc., where meanings are uncomplicated, there are minimal differences between groups. These are mainly the very common words, the only ones for which any semantic structure at all has been built up by first grade.

The relative position of blacks and whites in terms of number of paradigmatics shifts with advancing age, however, and both inner city blacks and whites show a slowed pace of development compared to suburban (white) children by third grade. Again, however, the rate alone tells only a small part of the story, for while the

semantic systems of white inner city children overlap considerably the semantic systems of white suburban children, semantic systems of black children depart significantly from both white groups, especially for more complex words. Some examples will clarify this point. A common word like "add" suggests "subtract" or "arithmetic" to almost all children, suburban or city, white or black. A much less common word "examine" suggests "test" and "check", both verb synonyms, to suburban fifth-graders. It suggests "test", "x-ray" and "doctor" more frequently (in that order) than other words to white inner city fifth-graders. To black inner-city fifth-graders it suggest "x-ray", "operate", and "doctor"--not general words like "test" or "check" that will broaden its meaning beyond the medical examination situation, but words restricted to a very specific context. "Examine" therefore might be viewed as having a constricted semantic structure for blacks.

Amish data. Before considering the Amish data, we need a few words about bilingualism and its possible effects on the linguistic development of Amish children.

Some responses of Amish first-graders are given in Dutch. When this happens the total paradigmatic response rate is unaltered i.e., when the form classes of Dutch responses and English responses are combined the same patterns are present as in form class counts for English-speaking rural Maryland children. Bilingualism might put a brake on semantic development, however, for many reasons. Looking only at the primary responses to the most common adjectives for first-graders, one sees that often the most frequent response is the Dutch equivalent of the stimulus word. By third grade the primary response corresponds with either the primary or secondary response of the rural Maryland group, its frequency usually being lower. (See responses to "cold", "dark",

"hard", "long", "short"). At fifth grade primary responses to a set of words already well consolidated by other groups (Table 2) are in some cases different and in most cases weaker. Further data of the same kind for Amish sixth-graders suggest that convergence toward high-frequency responses of the majority group is continuing but that some noticeable semantic differences are still retained even at sixth grade.

Because collection of Amish data was initially prompted by the hypothesis that Amish children would show syntagmatic response patterns like those of children 50 years ago (Woodrow and Lowell, 1916; Entwisle, 1966a), some prominent syntagmatic patterns--verbs in response to nouns and nouns in response to adjectives--are given for fifth-graders in Table 1. The prevalence of such patterns is low in both rural Maryland and inner city children, and while the Amish show more adjective-noun linkages than other modern groups the rate does not depart drastically from the rates noted for suburban children.

Qualitative differences between associative patterns of the Amish and other groups show several distinct features:

(1) Effects of a rural environment and a bilingual heritage are visible in the semantic structure. The word "chair" elicits "stool", rather than "table" which is the overwhelming response for other American children. This seems rather obviously traceable to "stuhl" the Dutch word for chair. Also, in reflection of the rural environment one sees "beetle" in response to "bug", "tulip" in response to "flower", "pheasant" in response to "bird". None of these responses is given by inner city children who give "roach" in response to "bug" which likewise reflects their environment.

(2) There are many syntagmatics still visible at 5th grade, and many past tenses given as associates to regular verbs. Both these tendencies probably signify a slowed pace of development and are reminiscent of the Woodrow and Lowell data. At the same time,

however, there are very mature semantic structures revealed in response to low-frequency verbs like "obey", "inquire", and "examine". The semantic constriction revealed in black inner city children's responses to "examine" has already been dwelt upon. Amish children, by contrast, give general responses like "test" (25 per cent) and "check" (20 per cent). It looks in some ways as if cognitive ability is outstripping verbal facility.

(3) The most obvious characteristic of Amish responses is their decreased commonality. The percentage of responses accounted for by the primary, secondary and tertiary responses is less for Amish than for other groups. The remainder of this paper will elaborate on this, especially in its relation to findings with other minority groups.

Commonality Comparisons. Comparing commonalities (the percentage of total responses accounted for by the three most common responses) between Amish children and other groups has drawbacks. Only 20 Amish children of each grade were interviewed and proportions based on 20 observations are not very stable. On the other hand, if one pays attention to only the most common of the primary responses (when the primary response accounts for 35 per cent or more of total responses) this drawback is less cogent and some suggestions about group differences emerge. Table 2 gives for primary responses of the white inner city children that occur more than 35 per cent of the time, the frequencies of that same response for several other fifth-grade groups. (Before fifth grade the syntagmatic-paradigmatic shift confounds findings based on commonality). Compared to white suburban children, Amish children are giving particular primary responses less often even when the primary response chosen by both groups is identical. For example "subtract" in response to "add", "happy" in response to "sad", and "pepper" in response to "salt". In most cases the

changes occurring between fifth and sixth grades for Amish children increase congruence with suburban responses, either qualitatively ("soft" replaces "stone" as the favorite response to "hard") or quantitatively (the frequency fo "subtract" as a response to "add" goes from 40 per cent to 55 per cent).

If these were all the data at hand it would be tempting to assume that generally minority group culture led to language socialization with less stereotyping than that characterizing the majority group. But just a glance at similar data for black (and white) inner city children (Appendix C) shows that almost the reverse apparently also occurs. Inner city black children, another minority group, show greater convergence to popular responses (Table 2) and less variety of response generally than blue collar suburban children at grade 5. Table 2 shows that generally <u>both</u> black and white inner city groups at fifth grade exceed the suburban group in strength of primary responses (see "bird", "black", "bright", "chair", "clean", "cold", etc.). The next question is: does this occur only for stimulus words like those in Table 2 that have especially strong primary responses, or only for very common words? Table 3 shows that convergence on a few popular responses by inner city children occurs for <u>all</u> categories of nouns and adjectives. With verbs, which generally develop later, the picture is not so clear-cut because some of the rarer verbs (maintain, restore) are still yielding large numbers of anomalous responses at fifth grade. (If "no response" is a frequent "response" category, analysis in terms of the "three most common responses", is not sensible). Even though there is not much difference in paradigmatic response rates across groups at fifth grade, as noted earlier (Entwisle, 1968), an overwhelming convergence in a few responses (average commonality for high frequency adjectives is 86 per cent for black and 88 per cent for white inner city children) may signify a failure in semantic

enrichment. This fact, together with the higher commonality for inner city children, points to a conclusion highly relevant to the elaborated-restricted code ideas proposed by Bernstein (1964): the same paradigmatic rates across fifth grade groups noted earlier (Entwisle, 1968 b) reflect rather different kinds of response distributions. The variety of responses for inner city children is less. This would lead one to guess that their semantic structures are not as rich as the suburban childrens'. This guess seems reasonable also in view of the finding that commonality does not continue to increase between fifth grade and college for high SES persons and in many cases actually decreases. Semantic enrichment may imply the opposite of a strong convergence on one or two responses.

In summary, then, two varieties of semantic structure appear to characterize two minority groups. One group, the Amish, shows less overlap with the majority in actual associative patterns but, from the small amount of evidence available here, do not appear to suffer from the kind of cognitive impoverishment that may characterize inner city children. Their responses to abstract verbs do not suggest deficits in abstraction. Their responses to specific words suggest a mildly divergent semantic structure ("pheasant" as a response to "bird") but if trends noted between fifth and sixth grades continue, such differences may be minimal by the time children leave school. The other group, the inner city disadvantaged, especially the blacks, display some patterns that suggest deficits in abstraction. The less frequent verbs are not as well elaborated by fifth grade as is noted for suburban children. In addition, there is less variety of response for those words that are well understood by all fifth graders. This can be taken as another concrete piece of evidence in support of Bernstein's hypothesis of a "restricted code" for lower class individuals.

Conclusion

Much evidence suggests that from first grade on there are widening gaps between the language of children from poverty environments and those from middle class groups. Word association research suggests specific kinds of deficits, particularly in consolidation of verbs and adverbs. Semantic systems are probably elaborated mainly over the grade-school age range, and so may be a particularly fruitful area for study in terms of action programs, although more basic research on semantic structures is clearly needed. In kindergarten and first grade, word meanings, and therefore the cognitive role of words overlap little for the black and the white child. Also whereas suburban children seem to be making orderly progress in expanding their semantic systems to imbed less frequent words over the elementary school years, slum children seem to make only limited progress toward use of language that is conceptually more elaborate than what they started school with ("maintain" produces "can", "retain" and "begin" for suburban third-graders but "no response" is the most frequent reply for both white and black slum children; "seldom" yields "often" and "always" as the most frequent responses in suburban third-graders but "sell" and "no response" as the two most frequent associates in both white and black slum children). One source of difficulties experienced in learning to read by inner city youngsters may be that their backgrounds (most notably television) have provided them with a knowledge of syntax and morphology, and perhaps even with a relatively high degree of linguistic competence in terms of several codes when they reach school, but once in school where reading and cognitive enrichment are supposedly being fostered, there seems to be a deceleration in development. There may be a lack of environmental forces to encourage semantic development which both cause reading deficits and at the same time rule out reading as a source of semantic enrichment.

No single remedy is likely to be sufficient. A very appealing idea is to invent games to be played in school that provide drill on particular skills, like building semantic structures, without eroding motivation. We have begun some work along these lines. Another remedy, probably the most fundamental, is obvious --more mixing of students in the school and in the community. Different semantic systems are no doubt a direct consequence of residential and educational segregation. With more mixing of students the semantic systems of all groups would tend to converge. This convergence would occur as a result of changes in all groups, not just the minority groups, and would thereby pose less of a burden for the underprivileged child. At present any "differences" between youngsters along social class lines are taken as "deficits" for lower class youngsters and lower class youngsters are expected to modify their behavior to overlap the behavior of the more privileged. In some areas, particularly language, there seems to be small reason to force all the change in one direction. The benefits from having all groups change slightly rather than having one group change greatly are not to be overrated.

Table 1. Comparison of Syntagmatic Response Patterns at Fifth Grade

Source of Data	Stimulus	Noun	Adjective
	Response	Verb	Noun
Woodrow and Lowell (1916)		31.0	53.1
Middle Class and Blue Collar (1961-63) Same stimulus words as Woodrow and Lowell		8.4	19.7
Middle Class[a] and Blue Collar (1961-63)		10.5	14.6
Rural Maryland[a] (1961-63)		11.5	12.7
Amish[a] (1962-63)		12.3	20.4
Inner City[a] White (1965)		11.7	13.1
Inner City[a] Black (1965)		11.8	12.6

[a] For stimulus words, see Entwisle, D. R., 1966 a.

Table 2. Comparison of Primary Response Frequency for Selected Stimulus Words[a]

Stimulus Word	Response[a]	Inner City[b]		Amish[c]		White Suburban[d]
		White (N=80)	Black (N=80)	5th grade (N=20)	6th grade (N=20)	5th grade (N=280)
Add	subtract	60.8	71.3	40.0	55.0	63.5
Bird	fly	38.0	32.5	30.0	25.0 (robin)	26.5
					20.0 (wing)	
					15.0	
Black	white	78.5	65.0	35.0 (yellow)	55.0	53.0
				20.0 (dark)		
				15.0 (color)		

a The stimulus words selected are those with a primary response of frequency 35 per cent or more for white inner city children, and the response for that group is the response listed. In cases where this response is not the primary response for another subgroup, its frequency is listed but in addition responses of higher frequency are listed.

b The data are taken from Entwisle and Greenberger, (1968), Appendix B. The samples are described in Entwisle (1968). Both blacks and whites have average IQ equal to 90.1.

c These data are taken from unpublished materials. For a description of the Amish samples see Entwisle 1966, pp. 95-102. The average IQ of Amish fifth graders is 100.1 and of Amish sixth graders is 96.6.

d "White suburban" children include 140 middle class (average IQ 115.9) and 140 blue collar (average IQ 89.9) fifth graders (See Entwisle, 1966, p. 17 and Appendix A). These are not the same children as those listed under "Blue Collar" in Appendix C.

Stimulus Word	Response	Inner City		Amish		White Suburban
		White	Black	5th grade	6th grade	5th grade
Bright	dark	40.5	36.3 (light)	25.0 (light)	40.0	25.0
			31.3	15.0		
Bug	insect	63.3	50.0	60.0	60.0	59.5
Chair	table	35.4	28.8	35.0 (stool)	25.0 (sit)	32.0 (sit)
				25.0 (sit)	25.0 (stool)	20.5
				20.0 (seat)	20.0 (seat)	
Clean	dirty	77.2	60.0	60.0	55.0	47.0
Cold	hot	62.0	50.0	35.0 (warm)	50.0 (warm)	44.0
				25.0	25.0	
Dark	light	81.0	76.3	45.0	75.0	68.0
Gallop	horse	45.6	30.0	30.0	35.0 (trot)	29.0
					30.0 (run)	
					15.0 (fast)	
Give	take	45.6	22.5 (gave)	40.0 (gave)	45.0 (gave)	36.0
			17.5	30.0	20.0	
Hand	arm	43.0	22.5 (finger)	35.0 (finger(s))	25.0	23.5
			18.8	15.0		
Hard	soft	69.6	72.5	55.0 (stone)	60.0	55.5
				25.0 (easy)		
				5.0 (not easy)		
He	her	57.0	41.3	40.0 (him)	35.0 (him)	31.5
				30.0 (she)	30.0	
				15.0 (her)		

Stimulus Word	Response	Inner City		Amish		White Suburban
		White	Black	5th grade	6th grade	5th grade
Her	him	65.8	46.8	40.0 (she)	45.0 (she)	38.5
				25.0 (him)	35.0	
High	low	79.7	68.8	65.0	70.0	64.0
Him	her	72.2	88.8	25.0	50.0	58.5
Insect	bug	46.8	36.8	25.0	25.0 (beetle)	51.0
					15.0	
Into	out	44.3	50.0	40.0	30.0 (in)	40.0
					20.0	
Long	short	75.9	85.0	60.0	70.0	64.0
Loud	soft	43.0	36.3	60.0 (noisy)	45.0	43.0
				10.0 (quiet)		
				10.0 (soft)		
Loudly	softly	38.0	27.5	30.0 (noisy)	55.0	38.0
				10.0 (loud)		
				10.0 (sound)		
Man	woman	64.6	62.5	30.0	55.0	52.5
Needle	thread	48.1	33.8	40.0 (pim)	40.0	31.0
				15.0 (sew)		
				15.0 (sharp)		
Ocean	sea	41.8	35.0	35.0	30.0 (water)	36.0
					25.0	
Off	on	93.7	92.5	65.0	45.0	74.5
On	off	83.5	76.8	55.0	40.0	57.0

Stimulus Word	Response	Inner City		Amish		White Suburban
		White	Black	5th grade	6th grade	5th grade
Once	twice	51.9	43.8	25.0 (one)	45.0	40.0
				15.0		
Pretty	ugly	65.8	47.5	25.0 (nice)	35.0	39.0
				15.0 (beautiful)		
				15.0 (ugly)		
Quiet	noisy	36.7	35.0 (loud)	50.0 (loud)	55.0 (loud)	33.0 (loud)
			31.3	15.0	10.0 (soft)	22.0
					5.0 (blue)	
Run	walk	45.6	48.8	30.0	40.0	35.0
Sad	happy	69.6	72.5	45.0	55.0	62.5
Salt	pepper	58.2	52.5	30.0	45.0	47.0
Short	long	63.3	45.0	55.0	45.0	49.0
Sit	stand	46.8	43.8	30.0 (seat)	45.0 (sat)	36.5
				15.0 (chair)	15.0 (chair)	
				15.0 (stool)	10.0 (down)	
Slow	fast	88.6	95.0	70.0	75.0	77.5
Slowly	fast	60.8	63.8	40.0	45.0	47.0
Smooth	rough	40.5	30.0	45.0	65.0	37.5
Sour	sweet	48.1	45.0 (bitter)	60.0 (bitter)	75.0 (bitter)	38.5
			30.0	15.0	15.0	
Square	round	35.4	26.8	25.0	30.0 (rectangle)	28.5
					20.0	
Table	chair	75.9	72.5	35.0	65.0	47.0
Tall	short	73.4	71.3	35.0	50.0	57.0
They	them	49.4	43.8	45.0	60.0	41.0

Stimulus Word	Response	Inner City		Amish		White Suburban
		White	Black	5th grade	6th grade	5th grade
Thirsty	water	36.7	45.0	45.0	35.0	37.0
Up	down	92.5	92.5	80.0	80.0	81.0
Us	you	36.7	21.3	25.0	75.0 (we)	22.5
Wing	fly	36.7	38.8	35.0	30.0	32.0 (bird)
						28.0

Table 3. Commonality[a] for Inner-City Blacks and Whites Compared to Suburban Whites (Fifth Graders)

	Inner City		Suburban[b]
	Black	White	White
High Freq. Nouns	56.8	58.6	51.4
Med. Freq. Nouns	65.4	64.6	57.8
Low Freq. Nouns	55.3	58.3	52.9
High Freq. Adj.	85.8	87.7	75.5
Med. Freq. Adj.	62.4	64.9	59.9
Low Freq. Adj.	70.7	72.0	65.1
High Freq. Verbs[c]	52.7	54.5	52.7
Med. Freq. Verbs	35.2	40.1	38.7

[a] "Commonality" is defined as the combined percent for primary, secondary, and tertiary responses.

[b] Low SES (blue collar) matched in IQ to both black and white inner city students. Data from Appendix C.

[c] Low frequency verbs are omitted because large numbers of "no response" make this kind of comparison impossible.

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Appendix A

Amish Children

Amish Children (Pennsylvania)

Three Most Popular Responses in Percentages

(Responses followed by (D) were given in Pennsylvania Dutch)

Stimulus Word	N = 20 First Grade		N = 20 Third Grade		N = 20 Fifth Grade	
Add	you	10.0	subtract	25.0	subtract	40.0
	and	05.0	uncle	15.0	addition	10.0
	baby	05.0	and	10.0	arithmetic	10.0
Allow	ain't allow	05.0	you	10.0	may	15.0
	alive	05.0	allowed	05.0	let	10.0
	allowed	05.0	alone	05.0	permit	10.0
Always	always (D)	10.0	about	10.0	all	10.0
	you	10.0	be	10.0	all the time	10.0
	all the time	05.0	never	10.0	everytime	10.0
Because	you	10.0	because	15.0	why	20.0
	auction	05.0	be	10.0	want	10.0
	be	05.0	chair	10.0	began	05.0
Bee	bumblebee	15.0	he	10.0	fly	25.0
	see	10.0	honey	10.0	sting	20.0
	butterfly	05.0	she	10.0	an insect	05.0
Begin	write	15.0	began	25.0	start	40.0
	go	10.0	before	10.0	began	15.0
	start	10.0	again	05.0	begun	10.0
Belong	long	10.0	long	10.0	long	20.0
	come	05.0	to	10.0	come	10.0
	big (D)	05.0	after	05.0	to	10.0
Between	middle	10.0	behind	10.0	beside	10.0
	and	05.0	outside	10.0	in between	10.0
	behind you(D)	05.0	above	05.0	middle	10.0
Bird	birdie	25.0	fly	15.0	fly	30.0
	box	20.0	heard	15.0	pheasant	10.0
	fly	05.0	wing	15.0	birds	05.0
Bitter	bit	10.0	butter	15.0	sour	45.0
	butter	10.0	better	10.0	sweet	25.0
	bag	05.0	bit	10.0	taste	10.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Black	cat	20.0	white	35.0	yellow	35.0
	back	15.0	cat	20.0	dark	20.0
	black	05.0	color	10.0	color	15.0
Bright	light	20.0	light	40.0	light	25.0
	shiny	10.0	dark	15.0	dark	15.0
	sun	10.0	day	10.0	right	10.0
Bug	buggy	15.0	insect	30.0	insect	60.0
	bite	05.0	fly	15.0	beetle	10.0
	chug	05.0	buggy	15.0	ant	05.0
Butterfly	fly	25.0	fly	15.0	insect	20.0
	fly (D)	15.0	insect	10.0	fly	15.0
	house (D)	10.0	begin	05.0	blue	05.0
Carry	care	10.0	drop	15.0	hold	15.0
	be careful	05.0	harry	10.0	take	15.0
	be careless	05.0	load	10.0	bag	10.0
Chair	stool	20.0	sit	25.0	stool	35.0
	sit	15.0	wear	10.0	sit	25.0
	bear	05.0	bed	05.0	seat	20.0
Clean	clean (D)	20.0	dirty	35.0	dirty	60.0
	up	10.0	nice	15.0	wash	10.0
	cat	05.0	climb	05.0	dirt	05.0
Cocoon	coon	20.0	animal	10.0	animal	15.0
	racoon	20.0	butterfly	10.0	coon	10.0
	barn	05.0	cat	10.0	rabbit	10.0
Cold	cold (D)	15.0	warm	35.0	warm	35.0
	corn (D)	10.0	hot	25.0	hot	25.0
	winter	10.0	cool	10.0	winter	15.0
Color	black	05.0	red	25.0	red	40.0
	blue	05.0	black	10.0	yellow	25.0
	brown	05.0	blue	10.0	white	15.0
Dark	dark (D)	20.0	light	40.0	light	45.0
	bow n' arrow	05.0	night	20.0	night	30.0
	curtain	05.0	bark	05.0	bark	05.0
Deceive	see	20.0	see	10.0	ceive	10.0
	calendar	05.0	clock	05.0	receive	10.0
	glasses (D)	05.0	door	05.0	book	05.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Enjoy	look	10.0	happy	20.0	happy	20.0
	all	05.0	it	15.0	unenjoy	15.0
	bird	05.0	begin	05.0	fun	10.0
Examine	bandage	10.0	bag	05.0	test	25.0
	an	05.0	each	05.0	check	20.0
	curtain	05.0	exercise	05.0	unexamine	10.0
Flower	flower (D)	15.0	fly	15.0	pretty	15.0
	flowers (D)	15.0	rose	15.0	tulip	15.0
	see	10.0	pretty	10.0	rose	10.0
Fly	bird	15.0	bee	10.0	insect	15.0
	butterfly	10.0	high	10.0	mosquito	10.0
	up	10.0	air	05.0	animal	05.0
Fruit	apple	10.0	banana	20.0	apple	35.0
	food (D)	10.0	orange	15.0	vegetable	20.0
	orange	10.0	apple	10.0	banana	10.0
Gallop	horse	25.0	horse	30.0	horse	30.0
	horse (D)	15.0	run	15.0	run	25.0
	run	10.0	walk	15.0	trot	15.0
Gently	animal	05.0	gentle	10.0	gentle	20.0
	any	05.0	nice	10.0	good	10.0
	book	05.0	down	05.0	kind	10.0
Give	give (D)	10.0	gave	20.0	gave	40.0
	gift	10.0	her	10.0	take	30.0
	cows	05.0	me	10.0	present	15.0
Hand	hand (D)	10.0	finger	20.0	finger	20.0
	band	05.0	feet	10.0	fingers	15.0
	barn	05.0	head	10.0	arm	15.0
Happen	happy	15.0	happy	20.0	happy	15.0
	and	05.0	eyes	05.0	accident	10.0
	bandage	05.0	happened	05.0	unhappen	10.0
Hard	hard (D)	20.0	easy	25.0	stone	55.0
	work	10.0	soft	25.0	easy	25.0
	board	05.0	work	10.0	not easy	05.0
He	you	10.0	me	20.0	him	40.0
	apple	05.0	she	20.0	she	30.0
	come	05.0	her	15.0	her	15.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Her	you (D)	10.0	him	35.0	she	40.0
	hair	10.0	he	15.0	him	25.0
	see	10.0	she	15.0	girl	10.0
High	up	25.0	low	35.0	low	65.0
	bye	15.0	fly	10.0	begin	05.0
	barry	05.0	air	05.0	branch	05.0
Him	you (D)	15.0	her	30.0	her	25.0
	boy	05.0	she	15.0	boy	15.0
	come	05.0	his	10.0	he	15.0
Inquire	quiet	15.0	in	15.0	require	10.0
	bird	05.0	clock	05.0	tell	10.0
	bright	05.0	door	05.0	argue	05.0
Insect	in	10.0	bug	15.0	bug	25.0
	bug	05.0	animal	10.0	animal	10.0
	calf	05.0	ant	10.0	ant	10.0
Into	in	20.0	out	35.0	out	40.0
	to	10.0	house	10.0	in	15.0
	you	10.0	inside	10.0	children	05.0
It	is	20.0	is	20.0	is	45.0
	you aren't(D)	10.0	hit	10.0	that	10.0
	butter	05.0	as	10.0	bat	05.0
Join	jump	15.0	jolly	10.0	game	10.0
	chair	05.0	joy	10.0	meat	10.0
	chewing gum	05.0	come	05.0	add to	05.0
Listen	listen (D)	15.0	carefully	10.0	hear	25.0
	look	10.0	clock	05.0	disobey	10.0
	car	05.0	girl	05.0	quiet	10.0
Long	long (D)	15.0	short	40.0	short	60.0
	a pear	05.0	ago	05.0	far	10.0
	black teeth	05.0	book	05.0	large	05.0
Loud	loud (D)	20.0	soft	35.0	noisy	60.0
	lion	10.0	quiet	20.0	quiet	10.0
	bear	05.0	low	10.0	soft	10.0
Loudly	loud	25.0	softly	20.0	noisy	30.0
	quiet	10.0	loud	10.0	loud	10.0
	slow	10.0	louder	10.0	sound	10.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Maintain	paint	10.0	again	05.0	belong	10.0
	corn	05.0	ate	05.0	no response	05.0
	me (D)	05.0	baby	05.0	came	05.0
Man	man	15.0	woman	35.0	woman	30.0
	work(D)	10.0	men	15.0	husband	20.0
	close	05.0	lady	10.0	men	20.0
Mix	cake	05.0	cake	15.0	stir	15.0
	clouds	05.0	fix	15.0	unmix	15.0
	down (D)	05.0	at	05.0	cake	10.0
Moth	bird	05.0	butterfly	35.0	ball	15.0
	bite	05.0	fly	10.0	insect	15.0
	brown	05.0	came	05.0	fly	10.0
Move	cow	10.0	glass	10.0	go	25.0
	gay	10.0	stop	10.0	still	15.0
	go	10.0	animal	05.0	around	05.0
Music	television	10.0	sing	20.0	sing	35.0
	almost like television	05.0	piano	15.0	song	15.0
	bell	05.0	box	05.0	piano	10.0
Needle	needle (D)	30.0	pin	30.0	pin	40.0
	sew	10.0	fiddle	05.0	sew	15.0
	string	10.0	hurt	05.0	sharp	15.0
Net	button (D)	10.0	fish	15.0	fish	30.0
	bah	05.0	nest	10.0	hair	10.0
	barn	05.0	no	10.0	bird	05.0
Never	again	10.0	ever	20.0	ever	20.0
	nothing (D)	10.0	again	15.0	always	10.0
	always	05.0	always	15.0	do	10.0
Obey	baby	15.0	bay	10.0	disobey	45.0
	bay	15.0	about	05.0	bay	10.0
	dog	10.0	comb	05.0	listen	10.0
Ocean	bird	05.0	river	30.0	river	35.0
	clock (D)	05.0	sea	30.0	sea	35.0
	oh its (D)	05.0	water	10.0	water	20.0
Off	go	10.0	on	55.0	on	65.0
	flowers (D)	05.0	bus	05.0	fall	10.0
	go to school (D)	05.0	cough	05.0	go	10.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
On	off	10.0	off	60.0	off	55.0
	you	10.0	go	10.0	in	10.0
	ball	05.0	fun	05.0	upon	10.0
Once	two	15.0	one	15.0	one	25.0
	one	10.0	two	10.0	twice	15.0
	ants	05.0	want	10.0	time	10.0
Pleasant	present	20.0	happy	15.0	nice	20.0
	Christmas	05.0	present	10.0	unpleasant	20.0
	teeth (D)	05.0	are	05.0	gentle	10.0
Prepare	pear	35.0	pare	15.0	unprepare	20.0
	bear	05.0	again	05.0	ready	15.0
	broth (D)	05.0	button	05.0	get ready	10.0
Pretty	nice (D)	20.0	nice	45.0	nice	25.0
	flower	15.0	ugly	15.0	beautiful	15.0
	flowers	15.0	flower	10.0	ugly	15.0
Quiet	quiet (D)	15.0	loud	45.0	loud	50.0
	a	05.0	be quiet	05.0	noisy	15.0
	apple	05.0	boy	05.0	chair	05.0
Restore	store	35.0	store	20.0	store	50.0
	at home	05.0	fruit	10.0	away	05.0
	cage	05.0	bank	05.0	fish	05.0
River	creek	15.0	water	20.0	water	30.0
	water (D)	15.0	ocean	15.0	lake	15.0
	bridge	10.0	creek	10.0	stream	15.0
Rough	fight	20.0	log	10.0	smooth	35.0
	mean	10.0	balloon	05.0	tough	10.0
	mad (D)	05.0	come	05.0	fast	05.0
Run	run (D)	15.0	fast	25.0	walk	30.0
	cat	05.0	ran	25.0	ran	25.0
	come	05.0	walk	20.0	desk	05.0
Sad	mad (D)	15.0	happy	35.0	happy	45.0
	are	05.0	mad	25.0	glad	15.0
	at	05.0	glad	10.0	unhappy	10.0
Salt	salt (D)	20.0	pepper	40.0	pepper	30.0
	pepper	15.0	sugar	15.0	bitter	15.0
	pepper (D)	10.0	glass	05.0	sweet	15.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Seldom	sell	10.0	sell	15.0	not often	10.0
	you	10.0	cellar	10.0	desk	05.0
	celery	05.0	butter	05.0	dog	05.0
Sell	apples	05.0	sold	20.0	buy	30.0
	by yourself	05.0	sale	10.0	sold	25.0
	celery	05.0	buy	10.0	books	05.0
She	sheep	15.0	he	50.0	he	40.0
	see	10.0	him	15.0	her	30.0
	can	05.0	her	05.0	him	15.0
Sheep	woods	15.0	lamb	55.0	lamb	35.0
	lamb	10.0	sheet	10.0	wool	15.0
	block	05.0	calf	05.0	animal	05.0
Short	little (D)	20.0	long	40.0	long	55.0
	long	10.0	little	10.0	little	15.0
	big	05.0	shot	10.0	seat	10.0
Since	and (D)	05.0	ago	05.0	now	15.0
	I have not seen you (D)	05.0	basket	05.0	when	10.0
	went (D)	05.0	before	05.0	ago	05.0
Sit	down	20.0	sat	35.0	seat	30.0
	stool	15.0	down	20.0	chair	15.0
	bat	05.0	chair	10.0	stool	15.0
Slow	chair	10.0	fast	50.0	fast	70.0
	sleep (D)	10.0	go	05.0	can	05.0
	slow (D)	10.0	little	05.0	dog	05.0
Slowly	slow	15.0	fast	20.0	fast	40.0
	sleep (D)	10.0	fastly	10.0	slow	15.0
	fast	10.0	slow	10.0	quick	10.0
Smooth	come	05.0	hard	20.0	rough	45.0
	cold (D)	05.0	small	10.0	hard	10.0
	cough (D)	05.0	soft	10.0	level	10.0
Sometimes	clock	10.0	work	10.0	always	15.0
	bake	05.0	after	05.0	desk	10.0
	blackboard	05.0	as	05.0	once	10.0
Sour	sour (D)	10.0	good	15.0	bitter	60.0
	good	10.0	flour	10.0	sweet	15.0
	cat	05.0	blanket	05.0	good	05.0
Square	block	10.0	corner	15.0	round	25.0
	box	10.0	block	10.0	triangle	20.0
	squirrel	10.0	round	10.0	a block	05.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Swift	a	05.0	soft	15.0	fast	30.0
	alight	05.0	paper	10.0	hard	10.0
	arm	05.0	strong	10.0	swiftly	10.0
Table	dish	35.0	chair	50.0	chair	35.0
	cable	05.0	eat	20.0	dish	15.0
	dishes (D)	05.0	back	05.0	eat	15.0
Tall	big	10.0	small	20.0	short	35.0
	little	10.0	large	10.0	large	20.0
	long	10.0	little	10.0	long	15.0
Tell	say (D)	10.0	ask	15.0	say	25.0
	you	10.0	night	15.0	ask	10.0
	blackboard	05.0	call	05.0	speak	10.0
Them	see	10.0	they	25.0	us	35.0
	can	05.0	then	15.0	they	20.0
	cap	05.0	us	10.0	him	10.0
They	are	05.0	them	20.0	them	45.0
	can play	05.0	then	15.0	him	15.0
	car	05.0	hay	10.0	hay	05.0
Thirsty	thirsty (D)	10.0	drink	55.0	water	45.0
	drink	10.0	unthirsty	10.0	drink	25.0
	ball	05.0	desk	05.0	hungry	15.0
Up	down	15.0	down	50.0	down	80.0
	go up	15.0	airplane	05.0	airplane	05.0
	up (D)	10.0	cover	05.0	high	05.0
Us	us (D)	10.0	you	40.0	you	25.0
	chair	05.0	boy	05.0	me	15.0
	church	05.0	children	05.0	we	15.0
Ususlly	bread	05.0	big	05.0	often	10.0
	can	05.0	clock	05.0	unusual	10.0
	always (D)	05.0	come	05.0	use	10.0
Wild	animal	10.0	tame	25.0	tame	45.0
	ox	10.0	animal	15.0	gentle	10.0
	wild	05.0	cat	15.0	animals	05.0
Wing	Barbara	05.0	bird	30.0	fly	35.0
	bird	05.0	fly	25.0	bird	20.0
	birdie	05.0	sing	10.0	feather	10.0
Yellow	black	15.0	white	30.0	color	55.0
	brown	10.0	orange	15.0	black	15.0
	\crayon	10.0	color	10.0	orange	10.0

Appendix B

Rural Maryland Children

Rural Maryland Children

Three Most Popular Responses in Percentages

Stimulus Word	N = 60 First Grade		N = 60 Third Grade		N = 60 Fifth Grade	
Add	one	05.0	subtract	41.6	subtract	63.3
	a	03.3	numbers	06.7	arithmetic	03.3
	numbers	03.3	mad	05.0	take away	03.3
Allow	chair	05.0	not allow	10.0	let	10.0
	now	05.0	let	08.3	do	06.7
	not	05.0	permission	05.0	not allow	05.0
Always	never	10.0	never	13.3	never	33.3
	here	05.0	because	06.7	forever	05.0
	chair	03.3	all the time	05.0	all the time	05.0
Because	why	10.0	why	13.3	why	16.7
	not	06.7	can't	05.0	reason	06.7
	of	05.0	after	03.3	don't	05.0
Bee	sting	06.7	sting	13.3	sting	18.3
	be	05.0	bug	10.0	insect	16.7
	bumble	05.0	fly	06.7	moth	13.3
Begin	and	05.0	start	18.3	start	30.0
	here	05.0	again	06.7	and	21.6
	school	05.0	began	06.7	stop	08.3
Belong	to	15.0	to	10.0	together	11.6
	here	06.7	club	05.0	to	10.0
	in	05.0	mine	05.0	own	05.0
Between	meals	05.0	middle	16.7	middle	28.3
	after	03.3	together	06.7	beside	10.0
	numbers	03.3	apart	03.3	before	05.0
Bird	fly	23.3	fly	23.3	fly	20.0
	nest	13.3	animal	16.7	robin	10.0
	robin	06.7	robin	10.0	flying	05.0
Bitter	cold	08.3	sour	28.3	sour	43.3
	sour	06.7	sweet	15.0	sweet	25.0
	butter	05.0	cold	11.6	cold	05.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Black	blue	11.6	white	23.3	white	33.3
	white	11.6	color	21.6	color	13.3
	brown	06.7	blue	10.0	blue	08.3
Bright	sun	18.3	dark	28.3	dark	21.6
	dark	08.3	sun	10.0	light	16.7
	light	08.3	color	06.7	smart	10.0
Bug	fly	21.6	insect	28.3	insect	48.3
	bee	16.7	bee	13.3	fly	13.3
	ant	05.0	beetle	10.0	bee	03.3
Butterfly	fly	21.6	fly	15.0	fly	20.0
	bee	08.3	moth	15.0	insect	16.7
	flies	06.7	insect	08.3	moth	13.3
Carry	baby	08.3	hold	10.0	walk	13.3
	me	06.7	heavy	06.7	drop	11.6
	this	05.0	walk	05.0	hold	11.6
Chair	sit	33.3	table	33.3	table	30.0
	table	18.3	sit	31.6	sit	28.3
	set	06.7	desk	06.7	seat	10.0
Clean	house	11.6	dirty	40.0	dirty	60.0
	dirty	10.0	dust	08.3	wash	08.3
	floor	08.3	home	08.3	clothes	06.7
Cocoon	animal	06.7	butterfly	11.6	butterfly	26.6
	raccoon	06.7	raccoon	11.6	animal	13.3
	butterfly	05.0	caterpillar	10.6	caterpillar	06.7
Cold	hot	20.0	hot	45.0	hot	43.3
	wind	08.3	warm	15.0	warm	20.0
	water	06.7	freezing	06.7	freeze	03.3
Color	red	11.6	red	21.6	red	20.0
	blue	08.3	green	13.3	blue	18.3
	book	03.3	blue	11.6	brown	10.0
Dark	night	25.0	light	58.3	light	68.3
	light	21.6	black	08.3	black	10.0
	black	03.3	night	08.3	bright	03.3
Deceive	now	06.7	receive	13.3	receive	21.6
	see	05.0	give	08.3	give	08.3
	dinner	03.3	didn't	03.3	money	03.3
Enjoy	fun	10.0	fun	20.0	happy	25.0
	this	06.7	happy	11.6	fun	21.6
	chair	03.3	like	10.0	like	13.3

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Examine	eyes	11.6	doctor	20.0	test	23.3
	me	06.7	test	13.3	doctor	13.3
	doctor	05.0	look	05.0	look	08.3
Flower	pretty	08.3	pretty	10.0	rose	15.0
	smell	05.0	rose	10.0	plant	10.0
	butterfly	03.3	plant	08.3	smell	10.0
Fly	bird	13.3	insect	20.0	insect	18.3
	butterfly	08.3	bird	11.6	wings	11.6
	high	06.7	bee	06.7	walk	11.6
Fruit	apple	13.3	apple	23.3	apple	21.6
	banana	10.0	orange	18.3	orange	20.0
	eat	08.3	vegetable	13.3	banana	15.0
Gallop	horse	41.6	horse	25.0	horse	26.7
	pony	03.3	trot	16.7	trot	18.3
	ride	03.3	run	15.0	run	15.0
Gently	hard	08.3	soft	20.0	softly	21.6
	be careful	03.3	softly	11.6	rough	08.3
	house	03.3	hard	10.0	soft	06.7
Give	take	06.7	gave	31.6	take	41.6
	do	05.0	take	16.7	deceive	10.0
	keep	05.0	receive	06.7	gave	10.0
Hand	fingers	13.3	arm	20.0	arm	30.0
	arm	06.7	fingers	06.7	fingers	16.7
	finger	03.3	head	08.3	foot	13.3
Happen	happy	03.3	didn't	06.7	did	11.6
	to	03.3	did	05.0	didn't	06.7
	yesterday	03.3	something	05.0	yesterday	06.7
Hard	work	16.7	soft	45.0	soft	43.3
	soft	08.3	easy	15.0	easy	28.3
	knock	06.7	work	08.3	work	06.7
He	boy	16.7	she	33.3	she	38.3
	she	15.0	her	25.0	her	23.3
	her	08.3	boy	08.3	boy	18.3
Her	he	11.6	he	21.6	him	33.3
	girl	10.0	him	21.6	he	21.6
	she	06.7	she	20.0	girl	20.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
High	low	16.7	low	48.3	low	70.0
	up	06.7	goodbye	08.3	by	05.0
	sky	05.0	bye	06.7	up	03.3
Him	her	21.6	her	51.7	her	56.7
	she	13.3	he	11.6	boy	11.6
	boy	05.0	man	08.3	he	08.3
Inquire	sing	13.3	ask	15.0	ask	15.0
	be quiet	05.0	choir	03.3	sing	06.7
	church	05.0	in	03.3	tell	05.0
Insect	bug	20.0	bug	53.3	bug	48.3
	ant	06.7	fly	08.3	fly	11.6
	bee	05.0	animal	06.7	animal	08.3
Into	house	18.3	out	33.3	out	46.7
	this	05.0	house	06.7	out of	10.0
	how	03.3	go	03.3	go in	05.0
It	is	25.0	that	15.0	that	15.0
	this	06.7	is	15.0	is	13.3
	can	03.3	at	10.0	thing	08.3
Join	me	06.7	club	10.0	together	26.7
	club	05.0	together	10.0	club	08.3
	party	05.0	unjoin	05.0	army	03.3
Listen	to	15.0	hear	46.7	hear	46.7
	hear	13.3	don't	03.3	quiet	10.0
	here	08.3	good	03.3	noisy	03.3
Long	short	10.0	short	58.3	short	70.0
	grass	06.7	time	03.3	narrow	03.3
	lawn mower	03.3	away	01.6	wide	03.3
Loud	soft	10.0	soft	30.0	soft	35.0
	quiet	08.3	quiet	13.3	quiet	21.6
	talk	06.7	holler	05.0	noisy	10.0
Loudly	softly	08.3	softly	16.7	softly	41.6
	quiet	05.0	soft	08.3	soft	08.3
	quietly	05.0	quiet	06.7	quiet	06.7
Maintain	man	06.7	fill	03.3	stay	10.0
	can	03.3	have	03.3	keep	08.3
	light	03.3	pepper	03.3	hold	05.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Man	woman	11.6	woman	45.0	woman	68.3
	boy	08.3	men	08.3	boy	08.3
	work	06.7	lady	05.0	men	03.3
Mix	cake	20.0	cake	13.3	stir	20.0
	bowl	05.0	stir	13.3	cake	15.0
	flour	05.0	together	06.7	together	10.0
Moth	ball	06.7	butterfly	21.6	ball	15.0
	butterfly	06.7	bug	11.6	butterfly	15.0
	cloth	03.3	insect	11.6	insect	15.0
Move	car	10.0	still	15.0	still	15.0
	go	05.0	stay	10.0	stay	11.6
	stop	05.0	fast	06.7	fast	10.0
Music	piano	16.7	piano	08.3	instrument	20.0
	sing	15.0	song	08.3	sing	18.3
	play	05.0	play	06.7	sound	05.0
Needle	thread	26.6	thread	33.3	thread	40.0
	sew	16.7	pin	11.6	pin	20.0
	pin	06.7	sharp	08.3	sew	10.0
Net	fish	16.7	fish	25.0	fish	38.3
	ball	03.3	ball	08.3	catch	08.3
	catch	03.3	catch	06.7	basket	06.7
Never	ever	08.3	ever	31.6	ever	21.6
	again	03.3	always	06.7	always	18.3
	no	03.3	do	05.0	do	06.7
Obey	law	10.0	listen	13.3	disobey	21.6
	mother	10.0	do	06.7	listen	16.7
	rules	08.3	mother	05.0	do	05.0
Ocean	water	23.3	sea	30.0	sea	41.6
	sea	16.7	water	18.3	water	28.3
	boat	13.3	river	10.0	river	08.3
Off	on	31.6	on	63.3	on	88.3
	go	05.0	not on	03.3	away	01.7
	light	05.0	down	03.3	go	01.7
On	off	18.3	off	43.3	off	55.0
	clothes	05.0	top	05.0	top	08.3
	light	05.0	at	01.7	go	05.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Once	something	06.7	twice	13.3	twice	26.6
	two	05.0	upon	08.3	upon	10.0
	again	03.3	again	06.7	one	08 3
Pleasant	happy	05.0	nice	16.6	unpleasant	18.3
	living	05.0	happy	13.3	nice	16.7
	give	03.3	unpleasant	10.0	happy	13.3
Prepare	fix	05.0	ready	23.3	ready	25.0
	broken	03.3	fix	11.6	get ready	15.0
	car	03.3	food	05.0	fix	06.7
Pretty	ugly	13.3	ugly	36.7	ugly	45.0
	girl	10.0	beautiful	31.6	beautiful	28.3
	dress	03.3	dress	03.3	cute	05.0
Quiet	noisy	08.3	loud	21.6	loud	26.6
	now	08.3	noisy	18.3	noisy	26.6
	loud	06.7	noise	06.7	soft	08.3
Restore	food	13.3	store	13.3	keep	13.3
	buy	08.3	food	06.7	put away	10.0
	groceries	08.3	keep	06.7	food	08.3
River	water	13.3	water	20.0	water	25.0
	boat	08.3	stream	15.0	stream	20.0
	lake	06.7	lake	13.3	lake	18.3
Rough	dog	11.6	soft	25.0	smooth	35.0
	smooth	05.0	smooth	13.3	hard	13.3
	soft	03.3	hard	10.0	soft	10.0
Run	play	15.0	fast	28.3	walk	40.0
	fast	13.3	walk	26.7	fast	21.6
	stop	08.3	ran	20.0	ran	10.0
Sad	happy	15.0	happy	55.0	happy	61.6
	mad	06.7	unhappy	15.0	unhappy	11.5
	cry	06.7	mad	08.3	mad	06.7
Salt	pepper	33.3	pepper	43.3	pepper	56.6
	food	06.7	sugar	13.3	sugar	13.3
	shaker	05.0	water	10.0	food	06.7
Seldom	sell	05.0	often	16.7	often	16.7
	pigs	03.3	never	05.0	never	08.3
	saw	03.3	drink	03.3	usually	06.7

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Sell	cow	06.7	buy	16.7	buy	25.0
	food	06.7	jail	08.3	sold	13.3
	salt	05.0	sold	08.3	give	08.3
She	he	26.6	he	45.0	her	26.6
	girl	06.7	her	21.6	he	28.3
	him	05.0	girl	06.7	girl	16.7
Sheep	lamb	10.0	lamb	35.0	lamb	40.0
	baa	05.0	wool	15.0	animal	18.3
	wool	05.0	animal	08.3	wool	06.7
Short	long	11.6	long	38.3	tall	46.6
	little	08.3	tall	21.6	long	36.7
	tall	06.7	small	10.0	small	08.3
Since	I	05.0	yesterday	10.0	yesterday	10.0
	that	05.0	then	06.7	before	06.7
	money	03.3	after	05.0	when	06.7
Sit	down	31.6	stand	30.0	start	30.0
	chair	20.0	down	20.0	and	21.6
	on	05.0	sat	16.7	stop	08.3
Slow	fast	28.3	fast	66.7	fast	70.0
	poke	05.0	not fast	05.0	faster	05.0
	go	05.0	walk	05.0	walk	03.3
Slowly	walk	18.3	fast	48.3	fast	56.6
	fast	13.3	slow	06.7	walk	10.0
	faster	05.0	walk	06.7	fastly	06.7
Smooth	hard	06.7	soft	26.7	rough	41.6
	soft	06.7	rough	21.6	soft	15.0
	rough	03.3	hard	10.0	hard	11.6
Sometimes	we	05.0	always	21.6	always	25.0
	you	05.0	often	06.7	never	10.0
	happy	03.3	we	05.0	all the time	06.7
Sour	milk	10.0	sweet	46.6	sweet	36.7
	pickle	08.3	lemon	11.6	bitter	05.0
	good	05.0	good	05.0	good	05.0
Square	triangle	10.0	round	26.6	block	25.0
	box	06.7	triangle	15.0	round	25.0
	round	05.0	circle	13.3	rectangle	13.3
Swift	cheese	05.0	fast	28.3	fast	41.6
	is	05.0	cheese	06.6	slow	11.6
	swim	05.0	slow	05.0	smooth	05.0

Stimulus Word	First Grade		Third Grade		Fifth Grade	
Table	chair	26.6	chair	48.3	chair	45.0
	food	10.0	desk	08.3	desk	08.3
	eat	06.7	food	05.0	eat	05.0
Tall	man	11.6	short	50.0	short	65.0
	big	10.0	little	08.3	little	03.3
	short	08.3	small	06.7	long	03.3
Tell	me	06.7	talk	15.0	talk	15.0
	show	03.3	told	08.3	told	13.3
	something	03.3	say	05.0	say	08.3
Them	they	08.3	they	35.0	they	40.0
	the	05.0	him	10.0	people	11.6
	a lot of people around	01.7	people	08.3	him	06.7
They	the	05.0	them	20.0	them	38.3
	are	03.3	people	10.0	their	08.3
	may	03.3	their	08.3	he	05.0
Thirsty	drink	31.6	drink	38.3	drink	31.6
	water	26.7	water	20.0	water	23.3
	hungry	03.3	hungry	13.3	hungry	18.3
Up	down	50.0	down	73.3	down	80.0
	go	03.3	high	08.3	high	08.3
	here	03.3	air	03.3	hill	03.3
Us	we	08.3	you	25.0	we	40.0
	here	06.7	we	13.3	you	21.6
	you	06.7	them	08.3	them	18.3
Usually	do	05.0	often	13.3	unusually	20.0
	go	05.0	unusually	11.6	unusual	15.0
	you	05.0	unusual	06.7	often	08.3
Wild	horse	13.3	tame	26.7	tame	46.6
	animal	10.0	animal	18.3	animal	06.7
	cat	08.3	furious	03.3	bird	03.3
Wing	bird	26.6	fly	31.6	fly	45.0
	fly	20.0	bird	25.0	bird	31.6
	swing	08.3	airplane	05.0	feathers	05.0
Yellow	blue	13.3	color	31.6	color	28.3
	crayon	08.3	green	16.7	green	13.3
	color	05.0	red	08.3	blue	10.0

Appendix C.

Commonalities (sum of percentages for three most popular responses) for inner city, (black and white), blue collar, and rural children. (Each group is half medium IQ and half low IQ.) Adults are 100 Goucher students and 100 Hopkins students.

	Inner City						Blue Collar			Rural			Adult
	1st grade		3rd grade		5th grade		1st	3rd	5th	1st	3rd	5th	
High-freq. nouns	B N=80	W N=80	B N=80	W N=80	B N=80	W N=80	N=140	N=140	N=140	N=40	N=40	N=40	(college) N=200
bird	31.3	45.1	37.5	42.6	53.8	48.2	48.5	50.7	52.0	32.5	40.0	27.5	45.0
color	25.0	22.6	36.3	37.6	45.6	44.3	35.0	41.5	39.0	25.0	45.0	52.5	52.0
flower	20.1	23.8	37.6	37.6	35.1	40.5	16.5	32.9	46.0	20.0	30.0	37.5	32.0
fly	18.8	27.6	28.8	27.6	42.5	49.4	27.1	32.9	42.0	17.5	22.5	45.0	26.5
hand	23.8	22.6	26.3	35.1	53.8	58.2	14.2	30.7	49.0	35.0	30.0	67.5	43.5
man	32.6	43.8	66.3	77.6	75.1	78.6	25.7	58.5	71.0	20.0	57.5	82.5	86.5
river	22.6	36.3	38.8	47.6	63.1	63.3	37.1	51.5	50.0	32.5	42.5	57.5	48.5
table	33.8	52.6	71.4	75.0	85.0	86.0	42.1	61.5	62.0	35.0	62.5	52.5	78.5
sum	208.0	274.4	343.0	380.7	454.0	468.5	246.2	360.2	411.0	217.5	330.0	422.5	412.5

Appendix C (cont.)

Med.-freq. nouns	1st Grade		3rd Grade		5th Grade		Blue Collar			Rural			Adult
	B	W	B	W	B	W	1st	3rd	5th	1st	3rd	5th	
chair	23.9	31.3	45.0	47.6	63.8	72.2	51.4	57.9	67.0	47.5	72.5	65.0	62.5
fruit	25.1	28.9	52.5	43.8	65.1	58.2	28.5	51.4	63.0	30.0	45.0	55.0	48.5
music	16.3	23.8	28.8	22.6	36.3	41.8	30.0	32.9	37.0	35.0	25.0	42.5	20.0
ocean	30.1	43.9	66.3	70.1	80.0	84.9	40.0	75.0	69.0	42.5	55.0	82.5	56.0
salt	32.6	56.3	71.3	72.6	71.3	69.6	45.0	77.2	60.0	40.0	72.5	67.5	54.5
sheep	32.5	31.3	48.8	51.3	66.3	58.2	21.4	46.5	48.0	15.0	47.5	62.5	48.0
square	38.8	30.0	35.0	55.1	71.9	62.0	21.4	55.0	57.0	17.5	60.0	70.0	62.0
wing	26.3	37.5	48.8	52.6	68.8	69.6	39.3	63.6	61.0	47.5	57.5	77.5	68.0
sum	225.6	283.0	396.5	415.7	523.5	516.5	277.0	459.5	462.0	275.0	435.0	522.5	419.5
Low-freq. nouns													
bee	13.8	15.0	22.6	27.6	41.3	46.9	12.9	30.0	44.0	15.0	30.0	35.0	39.0
bug	15.1	18.9	42.6	36.4	66.3	79.8	23.5	57.8	72.0	47.5	47.5	60.0	51.5
butterfly	15.0	42.5	35.1	50.0	65.1	51.9	40.0	42.1	49.0	42.5	35.0	62.5	32.5
cocoon	26.3	13.9	35.0	30.1	46.3	48.1	12.9	33.6	44.0	17.5	30.0	52.5	52.0
insect	20.0	20.1	40.1	43.9	63.1	67.1	20.0	60.7	69.0	17.5	67.5	72.5	63.0
moth	8.8	15.1	16.3	30.1	55.1	50.7	13.6	27.9	45.0	10.0	40.0	40.0	34.0
needle	18.8	17.5	30.1	55.1	62.6	72.2	25.0	60.0	54.0	45.0	50.0	75.0	60.0
net	20.1	13.9	21.3	26.3	42.6	49.3	27.2	35.7	46.0	20.0	37.5	50.0	54.0
sum	137.8	156.9	243.1	299.5	442.4	466.0	175.1	347.8	423.0	215.0	337.5	447.5	386.0
All Nouns	572	714	983	1096	1420	1451	698	1168	1296	708	1103	1393	1218

Appendix C (cont.)

High-freq. adjectives	1st Grade		3rd Grade		5th Grade		Blue Collar			Rural			Adult
	B	W	B	W	B	W	1st	3rd	5th	1st	3rd	5th	
black	23.9	43.9	58.9	68.8	80.0	91.2	27.1	63.6	77.0	32.5	45.0	55.0	70.5
cold	30.0	57.6	77.5	82.6	93.8	92.4	33.5	78.5	74.0	35.0	65.0	70.0	59.5
dark	31.3	50.0	71.3	83.9	90.1	91.2	37.8	84.2	79.0	40.0	77.5	82.5	78.0
hard	27.5	33.8	70.1	72.6	82.5	86.1	31.5	72.1	79.0	22.5	55.0	75.0	65.0
high	21.3	35.0	52.5	62.5	75.1	84.7	25.7	67.9	74.0	35.0	55.0	75.0	64.0
long	22.6	35.0	62.5	75.1	91.3	82.2	17.1	72.8	71.0	10.0	62.5	75.0	61.0
pretty	21.3	36.3	72.6	67.6	85.1	87.4	28.6	69.3	77.0	20.0	67.5	85.0	52.0
short	33.8	43.8	62.6	72.6	88.8	86.1	24.2	71.4	73.0	25.0	65.0	90.0	70.0
sum	211.7	335.4	528.0	585.7	686.7	701.3	225.5	579.8	604.0	220.0	492.5	607.5	520.0
Med.-freq. adjectives													
bright	45.1	37.5	61.3	58.8	72.6	69.6	33.6	65.0	54.0	37.5	32.5	50.0	42.0
clean	25.1	40.1	71.3	65.1	70.0	84.8	20.7	58.5	59.0	30.0	52.5	72.5	48.0
loud	25.1	21.3	55.1	62.6	66.4	73.4	25.0	43.6	51.0	20.0	42.5	57.5	71.5
pleasant	22.6	10.1	17.6	18.8	37.6	39.3	14.3	25.0	52.0	7.5	35.0	47.5	36.5
sad	55.1	48.8	78.8	71.3	92.6	83.5	32.1	81.4	88.0	25.0	72.5	85.0	62.0
tall	30.1	52.6	57.5	77.6	82.6	83.5	40.0	71.5	71.0	20.0	62.5	70.0	76.5
wild	16.3	20.1	22.6	25.0	33.9	41.8	25.7	30.0	52.0	27.5	47.5	55.0	33.5
yellow	18.8	37.6	38.8	47.6	43.3	43.1	28.5	45.0	52.0	37.5	42.5	57.5	31.5
sum	238.2	268.1	403.0	426.8	499.0	519.0	219.9	420.0	479.0	205.0	387.5	495.0	401.5

Appendix C (cont.)

Low-freq. adjectives	1st Grade		3rd Grade		5th Grade		Blue Collar			Rural			Adult
	B	W	B	W	B	W	1st	3rd	5th	1st	3rd	5th	
bitter	15.1	17.6	32.6	21.3	72.6	58.2	14.2	42.1	56.0	15.0	47.5	65.0	76.5
quiet	25.1	33.8	60.1	63.8	75.1	81.0	26.5	53.6	61.0	25.0	47.5	70.0	45.0
rough	45.1	26.3	50.1	43.8	62.6	64.5	26.5	44.3	56.0	20.0	45.0	67.5	48.0
slow	37.5	56.3	81.3	85.1	97.6	95.0	38.5	85.8	86.0	32.5	65.0	75.0	78.0
smooth	25.1	38.8	41.4	62.6	62.5	79.7	22.9	62.9	69.0	15.0	62.5	67.5	58.0
sour	20.1	25.1	45.0	52.5	81.3	81.1	18.6	46.4	64.0	32.5	62.5	65.0	61.5
swift	12.5	17.6	15.1	12.6	40.1	40.5	11.5	21.4	58.0	17.5	27.5	40.0	54.0
thirsty	51.3	55.1	73.8	68.8	73.9	75.9	59.3	70.7	71.0	57.5	75.0	70.0	68.5
sum	231.8	270.6	399.4	410.5	565.7	575.9	218.0	427.2	521.0	215.0	432.5	520.0	489.5
All Adj.	682	874	1330	1423	751	1796	663	1427	1604	640	1313	1623	1411
High-freq. verbs													
add	15.0	11.3	43.9	61.4	78.8	70.9	10.7	70.7	73.0	15.0	55.0	62.5	79.5
begin	11.3	20.1	22.6	28.8	57.6	58.3	13.6	37.1	70.0	15.0	25.0	50.0	67.0
carry	15.1	17.6	16.4	28.8	25.1	45.6	23.6	28.5	35.0	15.0	20.0	37.5	19.0
give	16.3	17.6	27.5	30.1	50.0	63.3	15.7	39.2	52.0	17.5	47.5	55.0	59.5
move	11.4	12.6	13.9	32.6	30.1	36.8	14.3	30.0	29.0	17.5	25.0	40.0	21.5
run	37.5	31.3	52.5	56.3	67.6	63.4	36.5	66.5	66.0	40.0	72.5	65.0	59.0
sit	36.3	57.5	56.3	68.8	75.1	78.5	59.3	67.2	66.0	55.0	55.0	67.5	67.5
tell	15.0	17.6	22.6	27.6	37.5	39.3	18.6	25.7	31.0	15.0	25.0	30.0	29.0
sum	157.9	185.6	255.7	334.4	421.8	456.1	192.3	364.9	422.0	190.0	325.0	407.5	402.0

Appendix C (cont.)

Med.-freq. verbs	1st Grade		3rd Grade		5th Grade		Blue Collar			Rural			Adult
	B	W	B	W	B	W	1st	3rd	5th	1st	3rd	5th	
allow	22.6	16.3	18.9	13.8	15.1	16.5	12.8	20.0	21.0	17.5	17.5	25.0	70.5
belong	13.9	12.6	15.1	13.8	22.6	29.1	16.4	21.5	32.0	20.0	17.5	25.0	43.5
enjoy	-	23.8	17.6	25.1	35.1	58.3	14.3	32.9	53.0	12.5	40.0	55.0	46.0
happen	17.5	16.3	16.4	16.4	15.0	12.7	13.5	20.0	19.0	20.0	17.5	22.5	55.5
join	8.8	13.9	23.8	22.6	43.8	43.0	17.1	29.3	37.0	17.5	20.0	27.5	38.5
listen	17.6	18.8	32.6	37.5	50.1	51.9	23.5	72.1	55.0	32.5	47.5	67.5	63.0
prepare	10.1	16.3	12.6	16.3	46.3	54.5	11.4	20.7	47.0	17.5	27.5	37.5	38.5
sell	22.6	16.4	22.5	27.6	53.8	54.4	13.6	24.3	46.0	22.5	17.5	42.5	39.5
sum	113.1	134.4	159.5	173.1	281.8	320.4	122.6	240.8	310.0	160.0	205.0	302.5	395.0
Total (16 verbs)	271	320	415	508	704	777	315	606	732	350	530	710	797